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## Role of smartphone-driven virtual reality field trips in inquiry-based learning

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# Role of smartphone-driven virtual reality field trips in inquiry-based learning

King's Ely Junior School: Alan Parkinson

FSC: Steve Tilling

GA: Becky Kitchen

OU: Ana-Despina Tudor and Shailey Minocha

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## Outline

- Virtual reality
- Smartphone-based virtual reality: Google Expeditions
- Our research goals
- Geographical enquiry and role of virtual reality
- Results from our empirical research

## What is virtual reality?

A simulated environment on a computer or **mobile platform** (e.g., smartphone, tablet):



Second Life

Virtual Skiddaw:  
3D Geology Field  
Trips (Unity 3D)



Mobility  
Google Expeditions App  
**Smartphone-driven virtual reality app involving Tablet, Phone and Google Cardboard**

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## Google Expeditions App

- Free app, available on Android and iOS platforms
- Over 500 expeditions (three types)
  - physical locations, e.g. London Olympic Park, International Space Station
  - simulations, e.g. process of photosynthesis and pollination
  - career expeditions, e.g. day in the life of a software developer, Dean of an Engineering Faculty
- Each expedition has
  - Photospheres (360° view) with some explanatory text, points of interest and questions (Guide mode)
  - Google Cardboard viewer gives the 3D view (follower mode)

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## Our research goals

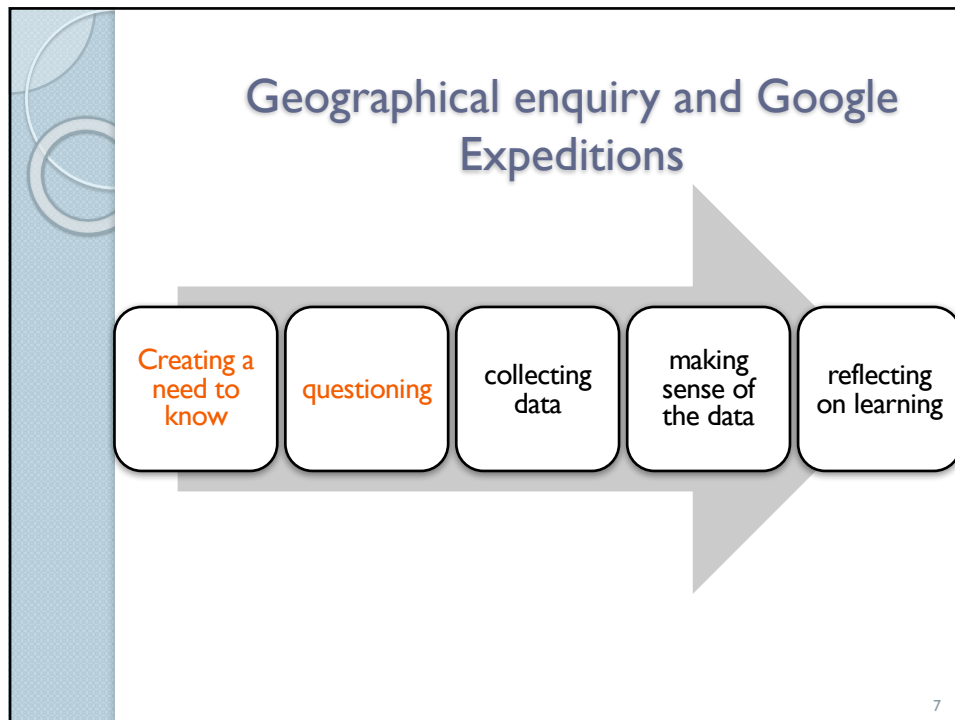
- Whether and how virtual reality-based Google Expeditions (GEs) can be integrated in the **Geography and Science curriculum**
  - Teaching concepts and phenomena
- How can GEs support enquiry?
- How can GEs complement physical field trips?

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## Our empirical work

- in schools
- workshops
- interviews
- qualitative data analysis

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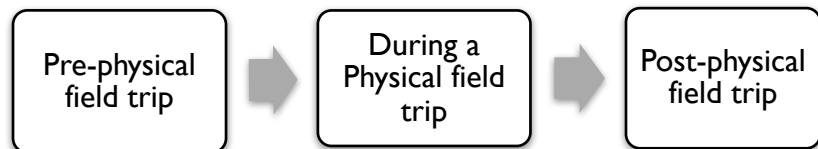


## Geographical Enquiry – Lesson Example

- Tropical rain forests and plant adaptations in Borneo
  - introduction of the topic and learning outcomes by the teacher
  - students look at the expedition; carried out think-pair-share activity
  - after the expedition: students completed an activity sheet individually – writing the questions that they would like to investigate
  - capturing their experiences: how did virtual reality help you to understand the characteristics of Tropical Rainforests?

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## Enquiry for physical field trips



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## Pre-physical field trips

- Planning the enquiry process
- Example – visiting London Olympic Park
  - To assess East London in its wider geographical context and its **economic** potential post-Olympics, particularly the **transport and commercial infrastructure** in Stratford
  - To evaluate how far this is likely to be a **sustainable regeneration**
  - To **assess the feelings of local people** about the regeneration of Stratford including the 2012 Olympic and Paralympic Games.

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## How enquiry is facilitated by virtual reality

- case study or story
- as initial stimulus material or an initial 'hook' to raise curiosity and interest
- initial question as a trigger for evidence collection

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## Resources and contact details

- Project website: <http://www.shaileyminocha.info/google-expeditions/>; has links to blog-posts
- email addresses: [shailey.minocha@open.ac.uk](mailto:shailey.minocha@open.ac.uk)  
[ana.tudor@open.ac.uk](mailto:ana.tudor@open.ac.uk)
- Twitter: @ShaileyMinocha @AATudor

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